

WHAT IS CLAIMED IS:

1. An apparatus for deactivating an engine valve in an engine component comprising:
an engine component having a sleeve cavity and an upper chamber formed therein
5 along a common axis, said sleeve cavity and said upper chamber being
 connected by a fluid flow passage;
an accumulator sleeve mounted for sliding movement along said axis in said sleeve
 cavity;
a follower piston retained in an interior of said sleeve for sliding movement along
10 said axis, said follower piston adapted to be moved in response to contact
 with a cam;
an upper piston mounted for sliding movement along said axis in said upper
 chamber, said upper piston being adapted to activate an engine valve;
a spool valve disposed in said passage, said spool valve being in a normally open
15 position to permit fluid flow through said passage between said sleeve
 cavity and said upper chamber; and
means for selectively actuating said spool valve between a closed position
 preventing fluid flow through said passage and said open position,
whereby when said sleeve cavity, said passage and said upper chamber are filled
20 with fluid, movement of said follower piston along said axis causes
 corresponding movement of said upper piston for activating a valve when
 said spool valve is in said open position and causes opposite movement of
 said accumulator sleeve and no movement of said upper piston for
 deactivating the valve when said spool valve is in said closed position.
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2. The apparatus according to claim 1 wherein said spool valve includes a spool body
having a first control surface in fluid communication with said sleeve cavity and a second
control surface in fluid communication with said upper chamber.

3. The apparatus according to claim 2 wherein said spool valve includes a first portion having said first control surface formed thereon, a second portion with said second control surface formed thereon, and a third portion extending between and having a smaller diameter than said first and second portions.

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4. The apparatus according to claim 2 including a return spring acting on said second control surface and biasing said spool body to said open position.

5. The apparatus according to claim 4 including an extension formed on said second
10 control surface and being received in an end of said return spring.

6. The apparatus according to claim 2 including a control valve connected between said upper chamber and said second control surface, said control valve being selectively operable between a closed mode causing said spool valve to be in said open position and an
15 open mode causing said spool valve to be in said closed position.

7. The apparatus according to claim 1 wherein said upper chamber and said control valve are connected to an oil supply passage formed in said engine component for receiving pressured fluid.

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8. The apparatus according to claim 7 including a check valve positioned in said oil supply passage for permitting fluid flow into said upper chamber from said control valve and a source of pressured fluid.

25 9. The apparatus according to claim 1 wherein said accumulator sleeve is stepped and said follower piston is positioned in a smaller diameter portion of said accumulator sleeve.

10. The apparatus according to claim 1 wherein said accumulator sleeve is stepped and including a return spring surrounding a smaller diameter portion of said accumulator sleeve
30 and biasing said accumulator toward said spool valve.

11. An apparatus for deactivating an engine valve in an engine component comprising:
an engine component having a sleeve cavity and an upper chamber formed therein
along a common axis, said sleeve cavity and said upper chamber being
connected by a fluid flow passage;
5 an accumulator sleeve mounted for sliding movement along said axis in said sleeve
cavity;
a follower piston retained in an interior of said sleeve for sliding movement along
said axis, said follower piston being in contact with a lobe of a cam;
an upper piston mounted for sliding movement along said axis in said upper
10 chamber, said upper piston being operably connected to an engine valve;
a spool valve disposed in said passage, said spool valve being in a normally open
position to permit fluid flow through said passage between said sleeve
cavity and said upper chamber; and
means for selectively actuating said spool valve between a closed position
15 preventing fluid flow through said passage and said open position,
whereby when said sleeve cavity, said passage and said upper chamber are filled
with fluid, rotation of said cam causes reciprocating movement of said
follower piston along said axis and corresponding movement of said upper
piston activating said valve when said spool valve is in said open position
20 and causes opposite movement of said accumulator sleeve and no
movement of said upper piston deactivating said valve when said spool
valve is in said closed position.

12. The apparatus according to claim 11 wherein said spool valve includes a spool
25 body having a first control surface in fluid communication with said sleeve cavity and a
second control surface in fluid communication with said upper chamber, said spool valve
being in said open position when forces acting on said first and second control surfaces are
equal.

13. The apparatus according to claim 12 wherein said spool valve includes a first portion having said first control surface formed thereon, a second portion having said second control surface formed thereon, and a third portion extending between and having a smaller diameter than said first and second portions.

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14. The apparatus according to claim 12 including a return spring acting on said second control surface and biasing said spool body toward said open position.

15. The apparatus according to claim 14 including a spring chamber formed in said engine component retaining said return spring and including an extension formed on said second control surface and being received in an end of said return spring.

16. The apparatus according to claim 12 including a control valve connected between said upper chamber and said second control surface, said control valve being selectively operable between a closed mode causing said spool valve to be in said open position and an open mode causing said spool valve to be in said closed position.

17. The apparatus according to claim 11 wherein said upper chamber and said control valve are connected to an oil supply passage formed in said engine component for receiving pressured fluid.

18. The apparatus according to claim 17 including a check valve positioned in said oil supply passage for permitting fluid flow into said upper chamber from said control valve and a source of pressured fluid.

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19. The apparatus according to claim 11 wherein said accumulator sleeve is stepped and said follower piston is positioned in a smaller diameter portion of said accumulator sleeve.

20. The apparatus according to claim 19 including a return spring surrounding a smaller diameter portion of said accumulator sleeve and biasing said accumulator toward said spool valve.